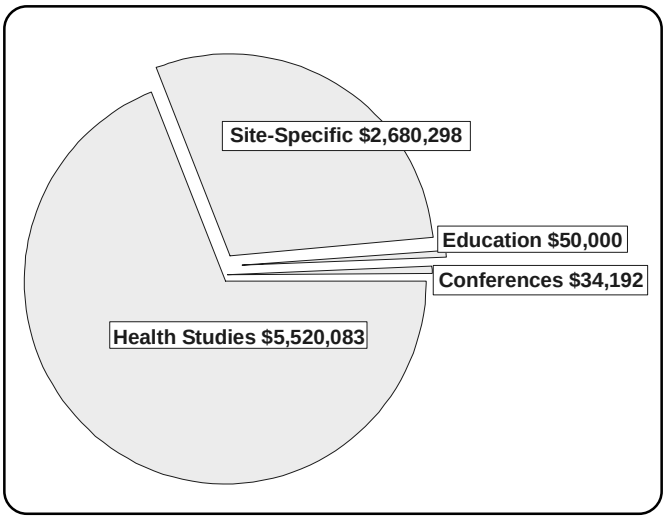
# Activities in Missouri

## ATSDR in Partnership with Missouri

The Agency for Toxic Substances and Disease Registry (ATSDR) is the lead public health agency responsible for implementing the health-related provisions of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA). ATSDR is an Atlanta-based federal agency with 400 employees. ATSDR's annual budget for 2001 was $76 million. ATSDR is responsible for assessing the presence and nature of health hazards at specific Superfund sites, helping to prevent or reduce further exposure and illnesses that result, and expanding the knowledge base about the health effects of exposure to hazardous substances.




ATSDR works closely with state agencies to carry out its mission of preventing exposure to contaminants at hazardous waste sites and preventing adverse health effects. ATSDR provides funding and technical assistance for states to identify and evaluate environmental health threats to communities. These resources enable state and local health departments to further investigate environmental health concerns and educate communities. This is accomplished through cooperative agreements and grants. At this time, ATSDR has cooperative agreements and grants with 31 states, one American Indian nation (Gila River Indian Community), and one commonwealth (Puerto Rico Department of Health). From **1987 through 2001**, ATSDR awarded more than **$8,284,573** in direct funds to the state of **Missouri.** In addition to direct funding, ATSDR staff provide technical and administrative guidance for state-conducted site activities.

One of the agency's important mandates is to conduct **public health assessments** of all National Priorities List (NPL) sites and of other sites where there might be a significant threat to the public health. In **Missouri,** there have been **30** sites designated to the NPL.

## ATSDR Site-Specific Activities

### Public Health Assessment-Related Activities

A **public health assessment** is a written, comprehensive evaluation of available data and information on the release of hazardous substances into the environment in a specific geographic area. It assesses the current or future impact of any such releases on public health. ATSDR and **Missouri** public health staff have conducted **37** public health assessments in the state. Following are some examples of health assessments that have been conducted in **Missouri**.

**Newton County Wells (Silver Creek)** - The contaminant of concern at this site was trichloroethylene (TCE). ATSDR participated in several public meetings hosted by the Environmental Protection Agency (EPA) to address health concerns of the community. The **Missouri Department of Health (MDOH)** and ATSDR distributed pertinent toxicological information on TCE. The final results of the public health assessment were published in July 1999.

**Wheeling Disposal Service Company Landfill** - The concern at this site was chromium contamination. The public health assessment recommended continued monitoring of off-site and on-site groundwater, surface water, and seeps, to determine contaminant migration. MDOH will continue annual monitoring of private wells around the site. The final results of the public health assessment were published in August 1999.

**Pools Prairie (Neosho Wells)** - The chief concern at this site was public exposure to groundwater contaminated with TCE. In addition to the public health assessment, the MDOH and ATSDR conducted several health consultations at this site. These health consultations were instrumental in the decision to provide bottled water and whole-house filtration systems to affected residents to prevent further exposure. The MDOH and ATSDR also recommended installation of a public water system to prevent possible future exposure. The final report was released in April 2000.

**Amoco Oil Company, Sugar Creek** - Amoco Oil Company operated a refinery at this site from the 1920s through 1984. Offsite contaminant migration occurred in the Norledge area of Sugar Creek. Area groundwater was contaminated with benzene and other petroleum-based volatile organic compounds (VOCs); however, analytical sampling has indicated no VOCs or metals at levels of health concern. The EPA and Amoco Oil Company conducted indoor air monitoring and ambient air sampling. The ATSDR and MDOH staff reviewed available brain cancer data but found no significant increase in incidence rate. Based on available environmental and toxicological information, in November 2000 ATSDR concluded that this site posed no apparent public health hazard. In response to community concerns, a cooperative agreement has been awarded to the **Jackson County Health Department** to determine the prevalence of multiple sclerosis in this community.

A **health consultation** is a written or oral response from ATSDR to a specific request for information about health risks related to a specific site, chemical release, or hazardous material. It is a more limited response than a public health assessment. The ATSDR and **Missouri** public health staff have conducted **502** health consultations at **140** sites in the state. Following are some examples of health consultations that have been conducted in **Missouri**.

**Herculaneum Lead Smelter** - The MDOH and ATSDR have conducted several health- related activities at this site. The site consists of 52 acres and the facility has been in operation for more than 100 years. Test results have determined that lead exposures to community residents pose an unacceptable public health hazard. In February 2002, screening conducted by the Missouri Department of Health and Senior Services (MDHHS) and ATSDR determined that 28% of children in the area have elevated blood-lead levels. This represents an urgent public health hazard. In response to these results, additional health consultations will be conducted during 2002 to evaluate remediation activities, evaluate the health implications of historic exposure to lead in air, evaluate the health implications of exposures to metals other than lead, and respond to community health concerns.

**Missouri Electric Works** - The MDOH and ATSDR staff have conducted four health consultations at this site. The main concerns at the site were polychlorinated biphenyl (PCB) soil contamination and the thermal desorption unit being used to remediate the soil. A health consultation that reviewed the remedial action work plan for the site was released in May 1999; it indicated that satisfactory detail and clarity regarding the protocols and rationale for these activities were lacking. Subsequent consultations reviewed the remediation activities as they occurred. These consultations documented serious concerns over the potential public health impact of PCB-contaminated soils being inadequately processed and listed several contingencies to be implemented. MDOH and ATSDR staff continue to work with our environmental counterparts to ensure public health protection as the project proceeds.

**Defiance Dump Sites -** In July 1998, EPA requested that ATSDR conduct a health consultation at these sites to determine levels of contamination for polychlorinated biphenyls (PCBs) and other hazardous substances. ATSDR and MDOH recommended that EPA consider removal actions based on the high levels of lead in additional areas. ATSDR and MDOH also expressed concern about multiple physical hazards posed to children trespassing in the area.

**St. Joseph Mercury Contamination** - ATSDR assisted in coordinating the multi-agency response that involved a school and eight homes contaminated with mercury. ATSDR provided the EPA and state and local health officials with information for health care providers and the general public. Approximately 25 teenagers were

clinically evaluated for mercury exposure; one of these was hospitalized for chelation therapy, another received chelation therapy as an outpatient, and at least six others showed clinical signs of mercury poisoning. ATSDR is consulting with the EPA on the health implications of various removal options.

A **public health advisory** is a statement of findings by ATSDR that a substance released into the environment poses a significant risk to human health. The advisory is issued to the EPA for its consideration in the management of the site and to inform the state health department, local officials, and the public about recommended activities at the site. To date, ATSDR has issued **one** public health advisory, which was at **Times Beach**, **Missouri**.

## Educating Health Professionals and Community Activities

ATSDR has cooperative agreements with 28 states to support educational activities for physicians, other health professionals, and communities concerning human exposure to hazardous substances in the environment. **Missouri** participated in this program during 1990 and 1991. During that time, the state conducted medical grand rounds presentations and contacted physicians by letter about specific health concerns related to hazardous waste sites in the state. Following is an example of this type of activity.

**Tri-State Mining District, Joplin** - Located partly in southwest **Missouri**, this site has been one of the largest lead-zinc mining areas in the world since the mid-1800s. The site is characterized by multiple waste piles and contaminated soils that resulted from mining, milling, and smelting of ore. Previous health studies showed that children in contaminated areas have higher blood-lead levels than those in comparison areas. ATSDR activities at this site indicated that 90% of the children screened had blood-lead levels below the level of health concern. Children with elevated blood-lead levels were screened again and referred for follow-up exams. The EPA completed time-critical soil removal at 600 homes using public health criteria (blood- and soil-lead levels) established by ATSDR.

## Health Studies

Following are brief descriptions of site-specific health studies and investigations that ATSDR has conducted or supported in **Missouri**.

**National Exposure Registry: Dioxin Subregistry** - The National Exposure Registry (NER) is comprised of chemical-specific subregistries to aid in assessing the long-term health consequences of low-level, long-term exposures to hazardous chemicals at hazardous waste sites. ATSDR selected dioxin as a target substance for a subregistry and selected sites throughout the nation where exposures had occurred. The following studies concerning dioxin were conducted in **Missouri**.

**Dioxin Reproductive Outcome Study** - This study evaluated the reproductive outcomes (malformations, fetal deaths, infant mortality, low birth weights) of women who resided in dioxin-contaminated areas between 1972 and 1983. The final report indicated that there were no statistically significant differences in birth defects associated with residential exposure to dioxin.

**Health Effects Study (1983-1987)** - This study evaluated dioxin contamination and its effects on persons living at specific sites. Although the study initially suggested some immunologic abnormalities in persons exposed to dioxins, additional studies determined there were no immunologic or other documented health effects.

**Adipose Tissue Study (1985-1987)** - This study evaluated levels of dioxin in adipose tissue and serum of potentially exposed persons, and a correlation, if one existed, between tissue dioxin levels and environmental exposure to dioxin. The final report showed moderately elevated levels of dioxin in the study participants. Occupationally exposed individuals were more likely to have elevated levels.

**Mortality Study (1984-1991)** - The study was conducted to determine whether mortality was increased by exposure to dioxin-contaminated chemicals. It included 7,000 workers from 14 facilities. Mortality from cancers was slightly elevated; however, the study did not confirm the high relative risk reported in earlier studies.

**National Morbidity Study (1985-1993)** - This study, initiated in April 1985, was conducted to determine whether workers exposed to dioxin-contaminated materials experienced unusual or excessive persistent morbidity. The study participants included about 100 former employees of the Syntex plant in Verona. This study of a highly exposed worker population provided information about the health outcomes most important for ATSDR to assess among registry populations.

**Missouri Central Listing Project** -**Missouri** established the Dioxin Central Listing in 1983 with support from the Centers for Disease Control and Prevention (CDC). ATSDR provided a grant to the MDOH to maintain and update the Central Listing, a computerized listing of persons potentially exposed to dioxin, and to provide educational materials to the participants.

**Blood Lead and Cadmium Exposure in Jasper County** - A series of multistate (including **Missouri)** studies was conducted to determine lead and cadmium exposure levels. The data from the series were combined and analyzed as one data set. The study found that the mean blood-lead level was higher in the target area than in the comparison area among children younger than 14 years of age. Children younger than 6 years of age living in homes with higher yard soil-lead measurements were more than twice as likely to have elevated blood-lead levels than children living in homes with lower yard soil-lead measurements. The final report was published in 1996. The database from this study is currently being used to help validate EPA's national model of lead uptake, absorption, and metabolism.

**Hazardous Substances Emergency Events Surveillance System** - ATSDR implemented an active, state-based surveillance system in 1990 to describe the public health consequences of hazardous substances releases. The MDOH received emergency funds and started data collection in 1993. In 1995, health departments of 14 states, including **Missouri**, participated.

**Times Beach** - This study was conducted in 1995 on health activities related to human exposure to hazardous substances at this site. The purpose of the project was to assess human exposure resulting from incineration of dioxin-contaminated soils and other materials by conducting interviews and collecting blood specimens. Investigators also collected and analyzed vegetables, yard soils, and milk and blood specimens from cattle, for concentrations of dioxins to estimate uptake and the risk of human exposure through these routes.

**Big River Mine Tailings** - This study was subcontracted to **St. Louis University,** the **St. Francis** county health department, and **Mineral Area Community College**. This cross-sectional study collected, analyzed, and compared blood-lead levels of children, aged 6 through 72 months, who potentially were exposed to lead in the target and comparison groups. The final report is in progress.

## Toxicological Profiles

ATSDR develops toxicological profiles that describe health effects, environmental characteristics, and other information for substances found at NPL sites. These profiles contain information on pathways of human exposure and the behavior of hazardous substances in environmental media such as air, soil, and water. In the past 4 years, more than **506** of these profiles have been sent to requesters in the state of **Missouri**, including representatives of federal, state, and local health and environmental departments; academic institutions; private industries; and nonprofit organizations.

**If you would like additional information, contact ATSDR toll-free at (888) 42ATSDR, that is, (888) 422-8737 or visit the homepage at http://www.atsdr.cdc.gov**